Quadro Professional Drivers
Release 190 Notes

Version 191.56 for NVIDIA Quadro

Windows 7, Windows Vista, Windows XP

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CHAPTER 1

Release 190 Notes Introduction

This edition of *Release 190 Notes* describes the Release 190 NVIDIA Quadro and provides information applicable to all NVIDIA drivers. NVIDIA provides these notes to enable add-in-card (AIC) producers and original equipment manufacturers (OEMs) to monitor performance improvements and bug fixes in each documented version of the driver.

Structure of the Document

This document is organized in the following sections:

- "Release 190 Driver Changes" on page 2 gives a summary of changes, and fixed and open issues in this version.
- "The Release 190 Driver" on page 17 describes the NVIDIA products and languages supported by this driver, the system requirements, and how to install the driver.
- "Mode Support for Windows" on page 21 lists the default resolutions supported by the driver.

Changes in this Edition

This edition of the *Release 190 Notes* for Windows includes information about NVIDIA graphics driver version 191.56.

CHAPTER 2

Release 190 Driver Changes

This chapter describes open issues in version 191.56, and resolved issues and driver enhancements for versions of the NVIDIA Release 190 driver up to version 191.56. The chapter contains these sections:

- "Release 190 Highlights" on page 2
- "Resolved Issues in Version 191.56" on page 7
- "Open Issues in Version 191.56" on page 9
- "Not NVIDIA Issues" on page 10
- "Known Product Limitations" on page 14

Release 190 Highlights

This section provides highlights of the Release 190 driver. It includes the following sections:

- "What's New in Release 190" on page 2
- "Limitations in This Release" on page 5

What's New in Release 190

The section summarizes the following driver changes in Release 190:

- NVIDIA Control Panel Updates
- Display Driver Updates
- CUDA Updates
- OpenGL Updates

NVIDIA Control Panel Updates

Display Settings Pages–Organizational Changes

- The following pages have been revised to include TV settings controls:
  - **Adjust Desktop Color Settings**

    Now includes controls to adjust TV color settings.
  - **Change Resolution**

    Now includes controls to adjust TV and HDTV signal formats and resolution.
  - **Adjust Desktop Size and Position**

    Now includes controls to adjust the TV screen size and position, and to resize the HDTV desktop.
- The following pages and links now appear in the Display category:
  - **HDCP Status** page
  - **Digital Audio** page
- The controls in the Manage Custom Resolutions page are now located in the **Change Resolution** page.

Display Settings Pages - Feature Changes

- **Adjust Desktop Color Settings** page

  For Geforce 8 series and later GPUS, the Digital Vibrance range is extended to include the black and white limit which now corresponds to 0%. The new default value is 50%.
- After resizing the HDTV desktop, the new resolution created is now added to the list of available resolutions for that display, and also added to the resolution list within the game or application.

Video & Television Pages

- The following pages and controls have been moved to the Display category:
  - **Adjust Television Color Settings** page (see Display->Adjust Desktop Color Settings)
  - **Change the signal or HD format** page (see Display->Change Resolution)
  - **Select Digital color format** page (see Display->Change Resolution)
  - **Adjust screen size and position** page (see Display->Adjust Desktop Size and Position)
  - **Resize HDTV desktop** page (see Display->Adjust Desktop Size and Position)
  - **HDCP Status** page
  - **Digital Audio** page

3D Settings Pages

- **Preferred Refresh Rate** lets you override the refresh rate limitations imposed by the 3D application for the indicated monitor.
- **SLI Performance Mode**

  The split-frame rendering (SFR) mode is no longer available as an SLI rendering mode option.
- **Power Management mode**

  Many NVIDIA graphics cards support multiple performance levels so that the PC can save power when full graphics performance is not required. To provide more control over these power management capabilities, NVIDIA has added the Power Management Mode control. The control consists of two settings–*Adaptive* and *Prefer Maximum Performance*.

  Adaptive: This is the default setting in which the graphics card monitors GPU usage and seamlessly switches between modes based on the performance demands of the application. This allows the GPU to always use the minimum amount of power required to run a given application, and can allow even older 3D games to run in lower power modes if the game does not require full 3D performance. NVIDIA recommends this setting for best overall balance of power and performance.

  Prefer Maximum Performance: This setting lets you maintain the card at its maximum performance level when 3D applications are running regardless of GPU usage. This option can be set Globally (for all 3D applications), or an application profile can be created under Program Settings to set the preference for a particular 3D application.

  This feature is supported only on select GeForce 9 Series and later GPUs and applies only to DirectX and OpenGL-based applications.

Display Driver Updates

- Added support for hardware overlays on both Clone mode displays.

  Previously, the driver supported only one hardware overlay, so only one Clone mode display could present the video overlay.
- EDID Override (for monitor manufacturers)

  The graphics driver now can use Extended Display Identification Data (EDID) overrides provided by the monitor manufacturers. These overrides are updated EDIDs contained within the monitor INF.

  Refer to the Microsoft white paper http://www.microsoft.com/whdc/device/display/edid_over.mspx.
- Automatic Desktop Scaling for Analog Displays

  (As of Release 185) To prevent unsupported timings from being applied to digital displays that use the analog (VGA) connection, the Windows 7 driver scales the desktop automatically. In a future driver release, controls will be available in the NVIDIA Control Panel to let you select the scaling method.

CUDA Updates

- Added support for 64-bit video encoding.
- Added support to make all GPUs within an SLI group available for CUDA applications to use.

OpenGL Updates

- Added support for OpenGL 3.1.
- Added support for Deep Color (30-bit color) rendering of OpenGL applications.

  Requires 10bpc-capable DisplayPort monitor and GeForce 8 series GPUs or later.

Limitations in This Release

The following are features that are not currently supported or have limited support in this driver release:

- **SDI**

  This driver does not support the Serial Display Interface (a standard for driving high color depth displays).

- **NVIDIA Control Panel Display Category**

  The Graph tab on the Adjust Desktop Color Settings page is not available.

Resolved Issues in Version 191.56

These sections list the changes made and the issues resolved for this version.

- "Resolved Issues–Windows 7 32-bit" on page 7
- "Resolved Issues–Windows 7 64-bit" on page 7
- "Resolved Issues–Windows Vista 32-bit" on page 7
- "Resolved Issues–Windows Vista 64-bit" on page 7
- "Resolved Issues–Windows XP 32-bit" on page 8
- "Resolved Issues–Windows XP 64-bit (None)" on page 8

The NVIDIA bug number is provided for reference whenever possible.

Resolved Issues–Windows 7 32-bit

- 190.92, dual Quadro FX 580: No NVIDIA Control Panel available. [597462]
- Quadro NVS 295: Playing two files within 15 minutes causes Windows Media Player to stop working. [597456]

Resolved Issues–Windows 7 64-bit

- 190.92, dual Quadro FX 580: No NVIDIA Control Panel available. [597462]
- HP RGS: Cursor problems with `NvAPI_D3D10_GetRenderedCursorAsBitmap`. [588959]

Resolved Issues–Windows Vista 32-bit

- 191.50, dual Quadro FX 1700 or dual Quadro 770M: Only three displays, not four, available with 191.50 driver. [599690]
- HP RGS gets back only the top 32 lines of a masked color cursor. [599697]
- HP RGS: Missing updates in Aero mode using the RGS/NVIDIA extensions. [585555]
- HP RGS: Enabling dual screen monitor with RGS/NVIDIA extensions causes same content to be displayed on both heads. [585557]
- HP RGS: NVIDIA extension `GetRenderedCursorAsBitmap` does not work after monitor powered off with multiple monitors attached. [588962]
- 191.50, Screen corruption when the mirror driver used. [599696]

Resolved Issues–Windows Vista 64-bit

- 191.50, dual Quadro FX 580: Graphics test suite doesn't display with a DisplayPort monitor on each Quadro FX 580. [601381]
- HP RGS gets back only the top 32 lines of a masked color cursor. [599697]
- 191.50, Screen corruption when the mirror driver used. [599696]

Resolved Issues–Windows XP 32-bit

- 191.50, dual Quadro NVS 450: Device Manager shows 16 monitors (should be two). [603874]
- Cadmeister displays incorrect lighting and surface symbols. [592656]
- Windows XP doesn't use the new client notification scheme for switching between DisplayPort and DVI or HDMI. [589258]
- 190.45, Quadro FX 4800, Quadro FX 3800, Quadro FX 5800: Distortion seen with DisplayPort. [587781]
- Quadro FX 4800: OpenGL application’s frame rate slows over time. [572878]

Resolved Issues–Windows XP 64-bit (None)

None reported.

Open Issues in Version 191.56

As with every released driver, version 191.56 of the Release 190 driver has open issues and enhancement requests associated with it. This section includes lists of issues that are either not fixed or not implemented in this version. Some problems listed may not have been thoroughly investigated and, in fact, may not be NVIDIA issues. Others may have workaround solutions.

- "Open Issues–Windows Vista 64-bit" on page 9
- "Open Issues–Windows XP 32-bit" on page 9

Open Issues–Windows Vista 64-bit

- 190.45, Quadro FX 4800: HP LP2480 sparkles at 1600 × 1200. [586076]

Open Issues–Windows XP 32-bit

- 190.45, Quadro FX 4800: Flashing or blank display in clone mode at certain resolutions. [588278]

Not NVIDIA Issues

This section lists issues that are not due to the NVIDIA driver as well as features that are not meant to be supported by the NVIDIA driver for Windows Vista.

- "Unsupported Features" on page 10
- "Feature Difference Between Windows 7 and Windows Vista" on page 12
- "OpenGL Application Issues" on page 13

Unsupported Features

The following are features and functionality that were available in driver releases supporting Windows XP, but are not available in driver releases for Windows Vista/Windows 7:

- **High resolution scaling desktop (HRSD)**
- **MultiView Display Mode** (for NVIDIA Quadro NVS graphics cards)
- **NVKeystone**
- **Unified back buffer (UBB) controls**
- **OpenGL Video Overlays**

  This is an operating system limitation.
- **Overclocking**

  GPU overclocking is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA nTune 5.05 software, which you can download from NVIDIA.com.
- **GPU Temperature Monitoring**

  Temperature monitoring is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA nTune 5.05 software, which you can download from NVIDIA.com.
- **AGP Settings Adjustment**
- **Full-screen Video Mirror**
- **Video Zoom**
- **Pan & Scan**

  This is the process of panning across the desktop in order to display a desktop on a monitor with lower resolution
- **Per-display Desktop Color Setting Adjustments**

For Clone mode, the desktop color setting adjustments through the NVIDIA Control Panel can only be made across all displays in a system, and not on a per-display basis.

- **Per-display Video Color Setting Adjustments**

  For Dualview mode, the video color setting adjustments through the NVIDIA Control Panel can only be made across all displays in a system, and not on a per-display basis.

- **nView Horizontal and Vertical Span Modes**

  Due to architectural changes in the new Windows Vista/Windows 7 Window Display Driver Model (WDDM), span mode cannot be supported in NVIDIA graphics drivers. NVIDIA recommends using the built-in Windows multi-display modes.

- **Edge Blending**
- **Run display optimization wizard**
- **Run multiple display wizard**
- **Run television setup wizard**
- **Display/Connection Wizard** (such as was provided with Windows Media Center Edition)
- **DVD/MPEG Extensions** (such as was provided with Windows Media Center Edition)
- **Audio Extensions** (such as was provided with Windows Media Center Edition)

Feature Difference Between Windows 7 and Windows Vista

Hotplug Action

Unlike the hotplug activity under Windows Vista, the default settings are not applied when a new display is hotplugged, and there is no message balloon alert stating that a new display was detected. Under Windows 7, all display connection and detection events are handled through the Windows 7 Connecting and Configuring Displays (CCD) mechanism.

NVIDIA Control Panel Rotate Display Page

The rotation radio button labels are changed slightly under Windows 7 to be consistent with the Microsoft panel:

Table 2.1 NVIDIA Control Panel Rotation Page Radio Buttons

Clockwise Rotation	Windows 7 Label	Windows Vista Label
0 degrees	Landscape	No rotation (Landscape)
90 degrees	Portrait	90 degrees to the right (Inverted Portrait)
180 degrees	Landscape (flipped)	180 degree rotation (Inverted landscape)
270 degrees	Portrait (flipped)	90 degrees to the left (Portrait)

OpenGL Application Issues

The following are known compatibility issues for OpenGL applications developed under Windows XP:

- Mixed GDI and OpenGL rendering does not work.

  A number of applications use GDI to render UI components and object highlighting. This is not supported in the Windows Vista driver model.

  NVIDIA recommends converting GDI rendering to OpenGL.

  The following are some applications that are known to have this issue:

  - Maya 7.01

- Applications, Tools, and Benchmarks not Supported Under Windows Vista/ Windows 7
  - GLperf
  - 3ds max 8 (later releases may be supported)
  - CATIA V5R15 (V5R16 is supported)
  - PTC's CDRS 2001

- Front buffered rendering may be slow, especially when DWM is enabled.

  Flushing the rendering queue while rendering to the front buffer may cause the window manager to recomposite. Applications should therefore minimize the frequency with which they flush the rendering queue.

Known Product Limitations

This section describes problems that will not be fixed. Usually, the source of the problem is beyond the control of NVIDIA. Following is the list of problems and where they are discussed in this document:

- "Switching to Clone Mode Disables Display #4" on page 14
- "Quadro FX 3700: WinDVD Does Not Display on the Second Display in Dualview" on page 14
- "Quadro NVS 440 and Quadro NVS 290 Combination Does Not Support Accelerated OpenGL" on page 15
- "Cannot Import ICC Profiles Through the NVIDIA Control Panel" on page 15
- "Aero Must be Enabled for Windowed SLI AFR Mode Under Vista" on page 15
- "SLI Connector Requirement on NVIDIA Quadro SLI Cards" on page 15
- "Applying Workstation Application Profiles" on page 15
- "Monitor Ordering in the Windows Settings Page" on page 16

Switching to Clone Mode Disables Display #4

- **Problem**

  On a dual GPU system with four attached displays, setting two of them to clone mode disables display #4.

- **Explanation**

  This is not an NVIDIA issue; it is an artifact of Windows XP multi-display support. After the switch to clone mode, there are only three surfaces to be shown, not four, and they are sent to the first three displays. Because this behavior may be confusing to end users, NVIDIA has implemented a registry key to disable clone mode.

Quadro FX 3700: WinDVD Does Not Display on the Second Display in Dualview

- **Problem**

  InterVideo WinDVD, version 5.0.11.1158, does not work on the second display in Dualview mode. Typically, when a video is displayed on the primary display in Dualview mode, the secondary display shows the video content in full-screen mode.

- **Explanation**

  Full-screen video mirroring is not supported by the Quadro FX 3700 (or any other G9*x* GPU); furthermore, it is not supported by Windows Vista.

Quadro NVS 440 and Quadro NVS 290 Combination Does Not Support Accelerated OpenGL

OpenGL, including OpenGL acceleration, isn't supported by NVIDIA for mixed GPU family configurations—NV43 and G86, in this case. OpenGL behavior is undefined in this situation; however, this absence of OpenGL support does not impact Direct3D functionality.

Cannot Import ICC Profiles Through the NVIDIA Control Panel

Although the Display Optimization Wizard supports the creation of new ICC profiles, there is no facility provided to import an existing one.

Aero Must be Enabled for Windowed SLI AFR Mode Under Vista

Windows 7 Aero must be enabled in order to achieve SLI acceleration using windowed AFR mode.

SLI Connector Requirement on NVIDIA Quadro SLI Cards

The SLI connector that links two SLI cards is needed for proper SLI operation. However, the connector can be removed if you do not intend to enable SLI mode. If you remove the connector, then you must make sure that SLI mode is disabled from the NVIDIA control panel. Enabling SLI mode without the SLI connector installed will result in video corruption.

Applying Workstation Application Profiles

- **Background**

  The workstation application profiles are software settings used by the NVIDIA Display Drivers to provide optimum performance when using a selected application. The profile also works around known application issues and bugs.

  If there is an available setting for an application, it should be used, otherwise incorrect behavior or reduced performance is likely to occur.

- **Issues**

  Configuration changes require the application to restart.

  Running applications do not receive notification of configuration changes, Therefore, if you change the configuration while the application is running,

you must exit and restart the application for the configuration changes to take effect.

Monitor Ordering in the Windows Settings Page

Monitor Ordering on a Single GPU System

- **Issue**

  The monitor order in the Display Properties Settings page is not consistently matched with the connectors on the graphics card.

- **Explanation**

  The driver does not distinguish connector positions, but instead distinguishes the display type, and consequently assigns monitor numbers according to the display type and not according to the connector.

Monitor Ordering on a Multiple GPU System

- **Issue**

  When four monitors are connected to a system with multiple PCI GPUs, such as a Quadro NVS 440 graphics card, and enabled in Dualview or Multiview mode, many customers expect the monitor ordering in the Display Properties Settings page to conform to the following:

Connector Position	Monitor Number
Primary GPU—Output 1	1
Primary GPU—Output 2	2
Secondary GPU—Output 1	3
Secondary GPU—Output 2	4

  The monitor ordering, in fact, does not conform to this scheme.

- **Explanation**

  The monitor ordering is not controlled by the driver, but rather by the Windows operating system method of enumerating PCI devices. The Windows enumeration results in the following monitor numbering:

Connector Position	Monitor Number
Primary GPU—Output 1	1
Secondary GPU—Output 1	2
Primary GPU—Output 2	3
Secondary GPU—Output 2	4

  Considerations for nView Span Modes: Outputs from the same GPUs are grouped together in nView Span modes, resulting in the desktop spanning across monitors 1 and 3, or across 2 and 4.

CHAPTER 3

The Release 190 Driver

This chapter covers the following main topics:

- "Hardware and Software Support" on page 17
- "Driver Installation" on page 20

Hardware and Software Support

The Release 190 driver supports Blade-Dual hardware as well as the products listed under NVIDIA Workstation Products Supported.

NVIDIA Workstation Products Supported

The following tables lists the NVIDIA workstation GPUs supported by the Release 190 driver.

Table 3.1 NVIDIA Workstation Products

NVIDIA Quadro FX 5800	NVIDIA Quadro FX 1500
NVIDIA Quadro FX 5600	NVIDIA Quadro FX 1400
NVIDIA Quadro FX 5500	NVIDIA Quadro FX 580
NVIDIA Quadro FX 4800	NVIDIA Quadro FX 570
NVIDIA Quadro FX 4600	NVIDIA Quadro FX 560
NVIDIA Quadro FX 4500 X2	NVIDIA Quadro FX 540
NVIDIA Quadro FX 4500	NVIDIA Quadro FX 380
NVIDIA Quadro FX 3800	NVIDIA Quadro FX 370
NVIDIA Quadro FX 3700	NVIDIA Quadro NVS 450
NVIDIA Quadro FX 3500	NVIDIA Quadro NVS 440
NVIDIA Quadro FX 3450	NVIDIA Quadro NVS 295

Table 3.1 NVIDIA Workstation Products (continued)

NVIDIA Quadro FX 3400/4400	NVIDIA Quadro NVS 290
NVIDIA Quadro FX 1800	NVIDIA Quadro NVS 285 128MB
NVIDIA Quadro FX 1700	NVIDIA Quadro NVS 285

Supported Operating Systems

The Release 190 driver, version 191.56, has been tested with Microsoft Windows® 7 RC build version 7100, and supports both 32-bit and 64-bit versions.

Supported Languages

The Release 190 NVIDIA Quadro support the following languages in the NVIDIA Control Panel:

English (USA)
English (UK)
Arabic
Chinese (Simplified)
Chinese (Traditional)
Czech
Danish
Dutch
Finnish
French
German
Greek
Hebrew
Hungarian
Italian
Japanese
Korean
Norwegian
Polish
Portuguese (Brazil)
Portuguese (Euro/Iberian)
Russian
Slovak
Slovenian
Spanish
Spanish (Latin America)
Swedish
Thai
Turkish

Driver Installation

Note: Starting with version 178.26, NVIDIA graphics drivers for HP Workstations no longer allow new versions to be installed over older ones. The user is now forced to uninstall previously installed drivers when installing a new one.

Minimum Hard Disk Space

The hard disk space requirement for 32-bit is minimum 105 MB for English-only, and 142 MB for International.

The hard disk space requirement for 64-bit is minimum 135 MB for English-only, and 170 MB for International.

Installation Instructions

1. Extract the zip files to a temporary folder on your PC.
2. Open Setup.exe to launch the NVIDIA InstallShield Wizard.

Follow the instructions in the NVIDIA InstallShield Wizard to complete the installation.

Note: After the driver installation, Windows may default to 16-bpp color and disable the Desktop Window Manager (DWM). To work around this issue, set the color to 32-bpp and then reboot the PC.

Opening the NVIDIA Control Panel

You can open the NVIDIA Control Panel in any of the following ways:

- Right-click the desktop, then click **NVIDIA Control Panel** from the context menu.
- Click **Advanced Settings** from the Windows Vista Display Settings window, then click the NVIDIA product tab.
- Open the Windows Vista Control Panel, then:
  - From the *classic* view of the Windows Vista Control Panel, click the NVIDIA Control Panel icon, or
  - From the *Control Panel Home* view of the Windows Vista Control Panel, click **Additional Options** and then click **NVIDIA Control Panel** from the Additional Options page.

APPENDIX

A

MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 190 driver for NVIDIA products. It contains these sections:

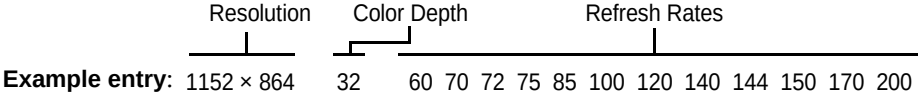
- "General Mode Support Information" on page 21
- "TV-Out Modes Supported by TV Encoders" on page 23

General Mode Support Information

Default Display Modes

The NVIDIA graphics driver includes a standard list of display modes that are supported by default. These modes are listed in the file **`modes.txt`** which is included in the OEM driver package.

Figure A.1 gives an example of how to read the mode information in the file.



Meaning:

Resolution: 1152 × 864
Color depth: 32 bpp
Refresh rates: 60 Hz, 70 Hz, 72 Hz, 75 Hz, 85 Hz, 100 Hz, 120 Hz, 140 Hz, 144 Hz, 150 Hz, 170 Hz, and 200 Hz

Figure A.1 Mode Format

Additional Display Modes

The actual modes available depend on the capabilities of the display. In addition, the NVIDIA graphics driver has a “dynamic EDID detection” capability and will make available *additional* modes that are listed in the display EDID, provided the graphics hardware can support it.

The NVIDIA graphics driver also supports the high resolutions available with the displays listed in Table A.1 as well as the non-standard modes listed in Table A.2.

Table A.1 Modes Supported for High Resolution Displays

Display	Maximum Resolution	Hardware Requirements
HP LP3065 Flat Panel Monitor (Dual-link DVI)	2560×1600 @ 60 Hz	• All high-end NVIDIA Quadro FX graphics solutions.
Apple 30” Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz	• All high-end NVIDIA Quadro FX graphic solutions.
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz	• All High-end NVIDIA Quadro FX graphic solutions.

Table A.2 Non-standard Modes Supported

Resolution
1680 × 1050
1366 × 768

TV-Out Modes Supported by TV Encoders

Table A.3 and Table A.4 list the NTSC, PAL, and HDTV TV-Out modes supported by the NVIDIA driver.

Table A.3 Mode Support for S-Video and Composite Out

Resolution	Bit depth	Comments
320 × 200	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
320 × 240	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
640 × 400	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
640 × 480	8, 16, 32	
720 × 480	8, 16, 32	Overscans (for video)
720 × 576	8, 16, 32	Overscans (for video)
800 × 600	8, 16, 32	
1024 × 768	8, 16, 32	Conexant 25871 only

Table A.4 Mode Support for Component YPrPb Out and DVI Out

Resolution	Comments
480i (SDTV)	Supported on graphics boards with Conexant 875 or Philips 7108 TV encoders and compatible connectors, and compatible GeForce 6 Series and GeForce 7 Series GPUs.
480p (EDTV)	
720p (HDTV)	
1080i (HDTV)	
576i (PAL)	
576p (PAL)	

The driver supports manual overscan correction for component and DVI outputs. Refer to the online Help for instructions on how to use the overscan correction features in the control panel.